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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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PEANUT SEED TREATMENT IN VIRGINIA -- 1944

Edward K. Vaughan

The season of 1944 has been particularly favorable for studying the effectiveness of peanut seed treatment, and for comparing various seed treatment materials as applied by commercial growers under field conditions. During the previous season a severe drought which lasted through most of the summer reduced the yields in all except the easternmost peanut-growing counties and many peanuts were shrivelled, light in weight, and low in vitality. The best growing conditions were encountered in those counties where the soil is most favorable for the growth of the crop, and the effects of the drought were most severe in those counties where the soil and climatic conditions are normally least favorable. Since there is comparatively little movement of peanut seed from one section to another it was possible to study the effects of seed treatments on seed of widely divergent quality planted in soils of very different degrees of adaptability to the growth of peanuts.

Methods and Materials. All seed were furnished by the grower, and were a part of the seed which were to be planted for commercial production. Only Jumbo or Virginia Runner types were used. Treatments were made by the growers, in whatever type of apparatus was available, under the direction of the writer or of the local County Agricultural Agent. Whenever possible all lots of seed were planted with the same planter and counts were made from the middle rows in each plot to avoid any carry-over effect due to small quantities of material remaining in the hopper. Stands were based on counts made in 50-foot sections of 4 rows, making a total of 200 feet of row counted in each plot. Stands in the untreated plots were considered as 100%, and the percent increase from the treatment is the percent above this figure. Since stands greater than those in the untreated plots can be attributed to seed treatment, they are a measure of the gain resulting from treatment of the seed.

Discussion of Results. In the counties where soil and climatic conditions are normally most favorable for the growing of peanuts (in this study tests were run in Nansemond and Surry Counties), and where favorable weather in 1943 had resulted in the production of seed of excellent quality, very good stands were obtained whether the seed was hand- or machine-shelled, and whether or not any chemical treatment was used. However, still better stands resulted from treatment of the seed (Table 1) and many growers stated that they were so favorably impressed by the results of seed treatment that they would never again plant untreated seed if the seed treatment materials could be obtained.

In the counties where soil and climatic conditions are not so favorable (tests were run in Sussex and Greensville Counties), and where the drought in 1943 had resulted in the production of seed of uncertain quality, poor stands resulted from the planting of untreated seed, particularly when machine-shelled seed was used. Here the benefits of seed treatment were very outstanding (Table 1). Many fields that were planted with untreated seed had to be plowed up and replanted, using treated seed. Growers were enthusiastic about the results of the treatments and expressed an almost unanimous determination to treat all peanut seed in the future.

Table 1. Results of peanut seed treatments in Virginia, 1944. Seed treated with Arasan, 2 ounces per 100 pounds of seed.

County: Cooperator	Seed shelled by	Number plants per 200 feet of row: Treated	Number plants per 200 feet of row: Untreated	Percent increase in stand due to the seed treatment
Greensville				
R. J. Brett, Emporia	Machine	193	91	112
C. C. Jones, "	"	251	187	34
H. C. Bryant, "	"	158	112	41
J. L. Mathews "	"	183	161	14
R. W. Brantley, "	"	273	72	279
G. C. Holloway, Jarratt	"	162	41	295
" "	"	157	58	171
Sussex				
M. D. Jones, Stony Creek	"	198	101	98
" "	"	235	96	143
" "	"	276	112	146
" "	"	256	112	128
B. J. Rideout, "	Hand	283	211	34
J. H. Mason, "	"	191	101	90
B. D. Wingfield, "	Machine	253	116	118
E. B. Parson, Jarratt	Hand	213	176	21
R. H. Parson, "	"	266	195	36
Oslen Parson, "	"	183	139	32
Carol Dunn, Gray	"	169	122	38
Chas. Dunn, Jr., Yale	Machine	178	42	324
Sol Jenkins, Wakefield	Hand	250	203	23
W. A. Beale, Waverly	Machine	267	207	29
J. J. Lilley, "	Hand	215	160	34
Stuart Nicholson,"	Machine	240	167	44
J. B. Jones, Disputanta	"	286	152	88
Surry				
J. H. Seward, Elberon	"	228	181	20
" "	"	231	211	9
E. F. Huber, Dendron	"	273	222	23
" "	"	267	230	15
Nansemond				
E. L. Felton, Holland	"	239	186	28
G. R. Holland, Suffolk	"	206	166	24

Average: Hand-shelled seed -- 38.5% increase in stand
Machine-shelled seed -- 99.2% increase in stand

Table 2. Results of peanut seed treatments in Virginia, 1944. Comparison of treatment materials, machine-shelled seed

County: Cooperator	Number of plants per 200 feet of row				Percent increase in stand due to treating seed with		
	Treated with			Not treated			
	Spergon	2% Ceresan	Arasan		Spergon	2% Ceresan	Arasan
Greensville							
J. L. Mathews, Emporia	237	224	183	161	48	39	14
R. W. Brantley, "	188	273	273	72	161	279	279
G. C. Holloway, Jr., Jarratt	98	125	162	41	139	205	300
" "	128	158	157	58	121	172	172
Sussex							
M. D. Jones, Stony Creek	212	227	198	101	112	127	98
" "	218	233	235	96	127	142	143
" "	237	262	256	112	111	134	128
" "	238	272	276	112	111	143	146
Surry							
J. H. Seward, Elberon	190	213	228	181	5	16	26
" "	190	232	231	211	-10	9	9
E. F. Huber, Dendron	224	237	273	222	1	7	23
" "	243	257	267	230	5	11	15
Nansemond							
E. L. Felton, Holland	197	202	239	186	6	9	28
G. R. Holland, Suffolk	168	206	206	166	1	24	24
Average increase in stand due to seed treatment					66.6	94.0	100.3

Comparison of Seed Treatment Materials. As a part of these investigations 3 commonly recommended materials were tested in adjacent plots in the same field. In each case the seed and the soil of all the treatments was the same. In general, the results are the same as those obtained with Arasan alone. With a single, unexplained, exception, better stands resulted from the use of treated seed regardless of which material was used, and the benefits of seed treatment were more outstanding in the counties where the seed was of poorer quality and the growing conditions were less favorable (Table 2). Improved stands were obtained by the application of all 3 materials. Arasan (50% tetramethyl thiuram-disulfide) was especially effective, and 2% Ceresan (2% ethyl mercury chloride) was almost as good. Spergon (98% tetrachloro-para benzoquinone), although fairly effective, was less so than the other 2 chemicals. These results are in agreement with those obtained in several seasons at the Holland Experiment Station, Holland, Virginia.

Experiments in several States during the past 4 years have indicated the

desirability of treating peanut seed to prevent seed decay and seedling blight. These studies point to the need for seed treatment regardless of the quality of the seed or the method of shelling, and strongly emphasize the necessity of treating machine-shelled seed, particularly when its vitality is low.

In the past, many Virginia farmers have treated peanut seed with kerosene as a repellent to prevent birds and rodents from eating the seed after it had been sown. Every grower who was interviewed indicated that all 3 materials used in these tests gave equally as good protection against these pests and that oiling the seed would no longer be necessary.

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE, EXTENSION SERVICE

THE QUALITY OF FLAX SEED FROM MINNESOTA, NORTH DAKOTA, AND MONTANA IN 1943.

Ian W. Tervet

Microflora of Seed. Twenty seed samples of flax, principally from Minnesota and North Dakota, with a few samples from northeastern Montana were examined for microflora. The seeds were disinfected by immersion in a solution containing 0.35% sodium hypochlorite and 0.3% Vatsol O. T. C. in water for 5 minutes and plated on acid potato dextrose agar (pH 4.0). For most samples 100 seeds were plated, but in some cases only 50 seeds were examined for microflora.

Table 1. Percentage seed free from fungi and response in seedling stand and health to treatment of seed with ethyl mercury phosphate.

County of origin of seed lot	Seed Color	Percent fungus-free seeds	Seedling Stand[a]			
			Not treated		Treated	
			Total	Healthy	Total	Healthy
North Dakota						
Burke	Mixed		86	85	88	88
Renville	Mixed	86	83	83	90	90
Bottineau	Brown	78	78	78	93	93
Mountrail	Mixed	58	51	51	93	90
Dunn	Mixed	24	73	69	89	89
McLean	Brown		82	75	87	87
Benson	Brown		73	71	86	85
Walsh	Brown	71	89	86	92	92
Barnes	Brown	56	88	87	90	89
Richland	Brown	18	57	57	61	61
Minnesota						
Mahnomen A	Yellow	12	65	63	81	81
Mahnomen B	Brown	0	75	73	81	75
Ottertail	Brown		79	76	76	74
Stevens	Brown		88	83	96	96
Yellow Medicine	Brown		75	65	89	85
Lyon	Brown	26	85	71	98	93
Nobles	Brown	25	75	69	85	82
Renville	Brown	22	36	32	49	49
Brown	Brown		77	71	95	95
Goodhue	Brown	48	56	22	85	84

[a] 100 seeds per row.

The most prevalent seed borne fungus was Alternaria, as high as 76% of the seeds being infected. Aspergillus spp., especially A. glaucus, were common on a few seed lots, but it is very possible that these seed lots were not of the 1943 crop. They were in all cases obtained from car lot samples being handled on the Minneapolis market while none of the lots obtained from the Minnesota State Seed Laboratory was infected with Aspergillus. Samples from Western North Dakota and Montana tended to have a higher percentage of clean seeds than samples from the Red River Valley or from western Minnesota. Colletotrichum lini was found on a few samples from Minnesota, a maximum of 12% of the seeds being infected while several of the Minnesota samples had up to 6% of the seeds infected with Helminthosporium sativum.

Fusarium lini and Fusarium spp. were uncommon on the seed, on the average less than 1% of the seeds being infected by these fungi. However, one lot from Richland County, North Dakota had 44% of the seeds infected by Fusarium spp. In no case was Sphaerella [Mycosphaerella] linorum obtained from seed, despite the heavy epidemic of pasmo last year. However, it is not altogether surprising that this fungus was not obtained for it grows very slowly and can be easily overgrown by Alternaria or other more rapidly growing fungi. Indeed it is not always possible to isolate this fungus from stem lesions, for again Alternaria commonly overgrows the Sphaerella.

If accurate information on the distribution of certain seed-borne pathogens is desired, it will be necessary to devise techniques of isolation that will inhibit the more quickly growing, and other non-pathogenic, fungi commonly found in seeds. This is true not only for flax but also for wheat, oats, barley, etc. where it is not uncommon to find colonies of Alternaria growing over Helminthosporium or Fusarium spp.

Viability of Seed. Several samples were grown in sand in the greenhouse. Two rows of 100 seeds each were planted, one row being planted with seeds treated with a surplus of 1% ethyl mercury phosphate (Semesan Jr.), the excess dust being screened off, and the second row of untreated seeds. The majority of the seed lots gave improved stands after treatment, in some instances, a very remarkable increase in the number of healthy plants being obtained with treatment. (See Table 1, sample from Goodhue County, Minnesota). Helminthosporium sp. was obtained from 6% of the seeds from the Goodhue County seed lot and it is possible that this fungus was responsible for the poor stand of healthy plants in the untreated sample.

Summary and Acknowledgment. A clear relationship between microflora of the seed and seedling blights resulting from seed borne pathogens was not established. The response of many seed lots to seed treatment suggested that some seeds were carrying pathogens, but it is probable that the isolation techniques used did not permit the development of some of these pathogens. It would be valuable to have methods available for analysing seeds so that slow growing fungi would have an opportunity to develop.

The samples were obtained from Henry Putman of the Northwest Crop Improvement Association and from Jack Larson of Minnesota Department of Agriculture. The writer wishes to thank these men for their cooperation.
EMERGENCY PLANT DISEASE PREVENTION PROJECT.

REPORTS ON DISEASES OF CEREAL CROPS

DISEASES ON BARLEY IN MARYLAND: Fields in southern Maryland were visited during the first week in May. Covered smut (Ustilago hordei) was observed in only one field, in the Mechanicsville area, where 1% of the heads were affected. Loose smut (U. nuda) was practically absent in most fields visited except at Valley Lee and Great Mills, where 3% infection was counted. Powdery mildew (Erysiphe graminis) was scattered throughout the area with the greatest infection observed in the lower part of the section; particularly around Mechanicsville, Valley Lee, and Great Mills. Thick stands favored the spread of this disease. Stripe (Helminthosporium gramineum) was observed in a mild form in most fields. -- E. A. Walker, Emergency Plant Disease Prevention Project.

BARLEY DISEASES IN IOWA: During the period ending July 8 surveys were made in northeastern and southeastern Iowa. Little barley was seen. In one field seen in Pocahontas County, 100% of the leaves bore blotches of net blotch (Helminthosporium teres), and at least 50% of the leaves were infected with spot blotch (H. sativum). As much as 5% stem rust (Puccinia graminis) was present. Root necrosis was very severe. Many of the plants were dying and when pulled up all of the roots appeared brown and dead. -- Edgar F. Vestal, Emergency Plant Disease Prevention Project.

BARLEY DISEASES IN NEBRASKA: From June 19 to 26 wheat, oats, and barley were examined in 30 counties in the eastern third of the State east of a line running from Norfolk to Kearney. Barley in northeastern Nebraska is mostly in the boot with a few fields headed. Oats are heading with some late fields still in the boot.

Most of the spring barley in Nebraska is found in the south-central and in the northeast counties. In this latter area the barley is still largely in the boot stage except for an occasional field which had headed. Final readings for barley smut and scab therefore, could not be made and a later trip is being planned in this area. Twenty-five fields in 14 counties were examined.

The most common disease is leaf blotch (Helminthosporium sp.) which was found in all but 3 of the fields. In most fields there were many dead leaves. In some cases foliage destruction was so extensive that in at least 5 cases over 50% of the leaves had been killed.

Judging from the amount of scab (Gibberella saubinetii) [G. zeae] that is present in the few fields that have headed, this disease will cause considerable damage. In 4 such fields the amounts were 10, 30, 30, and 50%. In 5 other fields scab was just beginning to show up.

Smut (Ustilago sp.) was present in every field but in most cases the smutted heads were still in the boot and final counts could not be made. In practically every case the amount that was observed was more than 1% with several fields having as many as 15% of the heads infected. This would indicate that considerable damage will be caused by barley smut this year.

Stem rust was found in 20 fields but in no case was the amount observed more than a trace, in the majority of cases on a few plants, although in 3 fields 50 to 100% of the plants were infected. Leaf rust (Puccinia anomala) was found in trace amounts on scattered plants in 5 fields.

Bacterial blight (Phytomonas [Xanthomonas] translucens) was found in 7 fields and was causing negligible damage except in one field in Antelope County where it was killing about 8% of the lower leaves. Septoria spot blotch (Septoria passerinii) was observed in small amounts in 7 fields. Root rot was killing some plants in one field in Nance County. -- Stuart M. Pady, Emergency Plant Disease Prevention Project.

BARLEY DISEASES IN OKLAHOMA: Approximately 275 acres surveyed. Leaf rust was observed in Bryan, Payne, Caddo, and Lincoln Counties. In most instances it occurred late in the growing season and caused very little reduction in yields. In a planting, observed for the first time on May 8, near Durant (Bryan County) a reduction of nearly 30% of the leaf area resulted from leaf rust.

Scald (Rhynchosporium secalis) occurred in several plantings; however, the most severe infection was observed near Prague (Lincoln County) where the foliage showed typical symptoms of this disease on May 27. The infection evidently occurred rather early in the season since many of the leaves were yellow and dead as a result of this disease.

Septoria leaf blotch was found on several of the leaves attacked by scald. In no instance was blotch causing an appreciable loss.

Powdery mildew occurred rather late in the growing season. The infections were mostly limited to the lower leaves; however, in one planting in Delaware County the flag leaves were infected. Taken as a whole, very little reduction in yields resulted.

Spot blotch and net blotch caused very little loss during the past season. Spot blotch was more prevalent than net blotch in most of the plantings observed. The most severely infected planting (Delaware County) had less than 20% of the leaf area invaded.

Loose smut and covered smut were observed causing very little loss in most fields. In most instances, however, a few smut-infected heads appeared in each barley field. A loss of over 5% occurred in a 45-acre planting near Durant (Bryan County) due to loose smut.

Very few plants were observed infected with stem rust. In most instances the infections were limited to a few plants. -- Howard W. Larsh, Emergency Plant Disease Prevention Project. June 7 - 20.

FUNGI ON BUCKWHEAT IN DELAWARE: Material collected near Laurel during the winter months produced Phomopsis fagopyri and Phyllosticta polygonorum in culture. Sclerotia of Sclerotinia sclerotiorum were evident on stems of samples from Glasgow. -- E. A. Walker, Emergency Plant Disease Prevention Project.

DISEASES ON SWEET CORN IN NEW YORK: Long Island: Stewart's bacterial wilt [Bacterium stewartii] was found in one field of non-hybrid corn at about the 5% level. Corn smut [Ustilago maydis] is scarce. -- L. M. Bartlett, Weekly News Letter, July 10.

FUNGI ON CORN LEFT IN FIELDS IN NEW JERSEY, DELAWARE, AND MARYLAND: During the winter months examinations were made at various farms in the 3 States. A considerable amount of corn was left in the field in shocks, and some was still standing in the field by the end of February. Wintering appeared to have only slight effect in increasing the amount of ear rot.

Green mold (Penicillium sp.) was observed in some of the fields where the shocks had fallen down and had not dried out properly. Diplodia ear rot (D. zeae) would average less than 1% for the area; while Fusarium ear rot (F. moniliforme) would average more than 1% of the ears affected. -- E. A. Walker, Emergency Plant Disease Prevention Project.

CORN DISEASES IN THE CAROLINAS: Corn examined during the period May 29 to June 10 in the Coastal Plains section appeared particularly healthy, the only diseases observed being Colletotrichum graminicolum leaf spot on the lower leaves and a trace of brown spot (Physoderma zeae-maydis).

The most serious disease observed in the mountains and in the Piedmont of North Carolina during the period June 12-24 was brown spot, which was not 100% prevalent in any field but was present in all fields visited. The affected plants were visibly less vigorous than the healthy adjacent plants. -- R. E. Atkinson, Emergency Plant Disease Prevention Project.

DISEASES OF CORN IN OKLAHOMA: Approximately 2500 acres of corn were surveyed during the period June 7 to 20. The most prevalent and destructive disease early in the growing season was smut. Very few fields were completely free. Typical leaf and stalk infections were observed in all of the severely affected plantings. A loss of 5% of the plants in a 15-acre planting between Tipton and Frederick (Tillman County) was observed.

Rust (Puccinia sorghi) occurred in several of the plantings surveyed. The most concentrated area of infection was in Hughes County near Holdenville. A loss of the lower leaves to rust was not at all uncommon in this area. Seedlings attacked by rust were dwarfed, yellow, and in several instances the leaves had been killed.

Leaf spot (Helminthosporium turcicum) was observed in Hughes, Pittsburg, and Latimer Counties. In no instance was the infection greater than 2%.-- Howard W. Larsh, Emergency Plant Disease Prevention Project.

DISEASES ON OATS IN NORTH CAROLINA: Few fields of oats were seen in the mountains during the period June 12 to 24. Fields were uniformly heavily rusted by crown rust (Puccinia coronata). No stem rust was observed on oats. Leaf spots caused by Helminthosporium avenae and Colletotrichum graminicolum were everywhere and were very severe in many fields. Smut (Ustilago sp.) was observed but not in excess of 2% in any field. -- R. E. Atkinson, Emergency Plant Disease Prevention Project.

LOOSE SMUTS ON OATS AND BARLEY IN WISCONSIN: Up to 5% loose smut infection was noted in several fields of mixed barley and oats in St. Croix County. -- Edwin E. Honey, Emergency Plant Disease Prevention Project. June 26 - 30.

OAT DISEASES IN IOWA: During the period ending July 8, surveys were made in northeastern and southeastern Iowa. In general, the crops are growing well. Most of them have recovered from the early rains and floods. Later storms of rain and hail have damaged the oats and corn severely in some sections of the northeast.

Most of the oats are in the head and much of the acreage will be cut in the next 10 days. Many of the oats in the field are short but they will probably weigh out better than expected as heads are fairly well developed.

Halo blight [Pseudomonas coronafaciens] continues to be the most important disease on the leaves and stems. Crown rust can be found in epidemic form

only on old varieties. Stem rust occurs only as a trace. Rusts are not likely to be serious this season as it is now so late that little, if any, damage could be done. Rust-resistant varieties are being grown this season more than ever before. Only in Howard County did a count along the highways indicate that there might be more than 10% of the fields planted to old varieties.

Scab [Gibberella zeae] was found in all fields as a trace. It does not appear that the disease will be serious on oats this year.

It will be root diseases that will cause most damage this season. Isolations indicate that Pythium spp. are the most common offenders. It is hard to estimate the damage but in some fields it is believed that a 1/3 loss of crop due to root necrosis diseases is a conservative estimate. -- Edgar F. Vestal, Emergency Plant Disease Prevention Project.

DISEASES OF OATS IN NEBRASKA: From June 19 to 26 wheat, oats, and barley were examined in 30 counties in the eastern third of the State east of a line running from Norfolk to Kearney. Oats are heading with some late fields still in the boot.

In 48 fields in 28 counties the oats showed a wide variation in maturity. Through the southern counties the oats were mainly in the soft dough stage but there were many late fields. In the northern part of the State most of the oats were just beginning to head. It was therefore, impossible to obtain final readings for most of the diseases.

Crown rust was found in 44 out of 48 fields in 24 counties. The amount in most fields is small; 19 fields had a trace on scattered plants. Only 12 fields had 1% or over and the highest amount was 10% on all culms found in a field in Gage County. In general the older fields in the south and southeastern counties have the most crown rust.

Stem rust (Puccinia graminis avenae) was found in 76% of the fields in 24 counties. The amount of stem rust is slight, 32 out of 38 fields having a trace which varied in amount from a trace on scattered plants to a trace on all plants. In two fields in Gage County, the amount reached 3% and 5% and was potentially serious. Weather conditions during the next few weeks would determine how much damage would be caused by stem rust.

Since in many of the fields the oats were still in the boot stage, it was impossible to obtain accurate smut percentages. In 16 fields a trace was found while in only 4 fields did the percentage run over 1, with 2 fields being recorded as 5%. In 26 fields no smut whatsoever could be found, even in fields which had already headed.

Halo blight (Phytomonas [Pseudomonas] coronafaciens) is the most conspicuous disease on oats in the eastern tier of counties. It was found in 26 fields in 16 counties ranging from a trace on scattered plants to 40% infection on 100% of the leaves. The southeastern counties of Sarpy, Cass, Otoe, Nemaha and Richardson contained the greatest amount of halo blight and every field examined in these counties was heavily infected. In some fields every leaf had one to several lesions and the older basal leaves were being killed.

In 14 fields a seedling blight was found which was causing the death of the plants, usually as they were in the boot stage. The flag leaves turn yellow and these are especially conspicuous. The lower leaves are dead or dying. The crown shows pink to red discoloration of the tissues and pink lesions are present on the roots. In some cases the plants have been killed

earlier than the boot stage. This condition resembles Fusarium blight caused by Gibberella saubinetii [G.zeae]. -- Stuart M. Pady, Emergency Plant Disease Prevention Project.

DISEASES OF OATS IN OKLAHOMA: Approximately 2600 acres of oats were surveyed, June 7 to 20.

Crown rust was observed in nearly every planting of oats surveyed. The amount of infection varied from a trace to 85% of the leaf area invaded. In many instances infection occurred early enough to cause a marked reduction in yields. The most severely infected planting observed was near Grove (Delaware County); a reduction in yield was inevitable since the plants were in the early milk stage and the leaves were infected to the extent of 85% of their areas. Similar losses were observed in Garfield, Kingfisher, and Canadian Counties.

Stem rust occurred in several plantings. In most instances infection was limited to localized areas in a planting. However, in 2 fields (Delaware and Garfield Counties) stem rust was severe enough to cause slight reduction in yield. These plantings were in the milk stage and at least 40% of the plants had been attacked by stem rust.

Anthracnose (Colletotrichum graminicolum) was evident in several plantings. In nearly all of the cases observed, it destroyed relatively few plants, although leaf infection was fairly prevalent early in the growing season. The loss, in no instance, was more than 2%.

Helminthosporium leaf blight was present in several plantings in northeastern and southern Oklahoma. Infection was mostly limited to the lower leaves; however, in a 40-acre planting near Jay (Delaware County) the flag leaves were infected with blight.

Infections of halo blight occurred in most fields surveyed in the northeastern part of the State. The amount of damage was slight, although in one planting an infection which reduced the leaf area nearly 2% was observed.

Very few fields in northeastern Oklahoma were free from loose smut (Ustilago avenae) and covered smut (Ustilago levis)[U. kolleri]. Infection varied from a trace to nearly 20% averaging less than 5%. -- Howard W. Larsh, Emergency Plant Disease Prevention Project.

RED LEAF OF OATS IN WESTERN WASHINGTON: Red leaf (nonparasitic) was very marked in some fields observed in Gray's Harbor County, June 20, and was generally prevalent in the area west of Port Angeles. -- Lytton J. Boyle, Emergency Plant Disease Prevention Project.

RICE DISEASES OBSERVED IN TEXAS: During the last week of June, rice fields were examined in Orange, Jefferson, Chambers, Liberty, and Harris Counties. Owing to the wet weather in the early season, many fields were planted late; consequently the stage of plant growth varies considerably between fields in any particular area. The disease most commonly seen was brown spot caused by Helminthosporium oryzae, traces of which were found in all fields, but no serious infections were noted. Rice smut (Entyloma oryzae) was found in a localized area of one field near Hockley, in the northern part of Harris County. Traces of narrow brown spot (Cercospora oryzae), blast (Piricularia oryzae), and white tip (nonparasitic) were noted in a few instances. -- George E. Altstatt, Emergency Plant Disease Prevention Project.

REPORTS ON DISEASES OF RYE: E. A. Walker reported that powdery mildew (Erysiphe graminis) was generally not observed in fields examined in southern Maryland during the first week in May, except at Baden in a thick stand where the lower leaves were browning.

Leaf rust (Puccinia rubigo-vera var. secalis) was present in nearly every one of the rye fields, totalling approximately 200 acres, surveyed in Oklahoma during the period June 7 to 20, according to Howard W. Larsh. Mostly very little reduction in leaf area resulted, but over 60% was estimated in a 40-acre planting near Durant in Bryan County. -- Emergency Plant Disease Prevention Project.

DISEASES OF SORGHUM AND MILLET IN OKLAHOMA: Approximately 500 acres of these crops were surveyed. In a large millet planting near Temple in Cotton County, nearly 20% of the leaf area was affected by bacterial spot (Pseudomonas syringae). Sorghum plantings in the southern tier of counties showed infections of stripe (Pseudomonas andropogoni), streak (Xanthomonas holcicola) and bacterial spot (P. syringae), in nearly every planting observed, but the amount of loss was negligible at the time of observation. -- Howard W. Larsh, Emergency Plant Disease Prevention Project. June 7 to 20.

NEMATODE AND OTHER WHEAT DISEASES IN SOUTHERN MARYLAND: Plantings were visited in southern Maryland during the first week in May. Leaf rust (Puccinia triticina) [P. rubigo-vera var. tritici] was observed in a mild form near Baden. Powdery mildew was spotting the leaves and leaf sheaths near Largo and Baden in thick stands.

Nematode (Tylenchus [Anguina] tritici), causing dwarf, leaf curl, and premature heading, was observed affecting 60% of the plants in a 10-acre field. The field was sown with seed certified 2 years previously. Samples of wheat in the granary representing the 1943 crop showed 15% of the kernels darkened and galled from nematode infection. -- E. A. Walker, Emergency Plant Disease Prevention Project.

WHEAT DISEASES IN NORTH CAROLINA: The period June 12 to 24 was spent in the mountains and in the Piedmont of North Carolina. The cereals in the mountain valleys are in the dough stage. In the Piedmont a few late fields are not yet cut, while in the Coastal Plains grain has been harvested for about 2 weeks.

The first stem rust of wheat (Puccinia graminis var. tritici) observed this year in the Carolinas was found in great abundance in the mountains. The wheat crop was very poor this year, due almost entirely to the severe epidemics of leaf and stem rusts. Every plant in every field examined was rusted, with severity estimated at 30 to 35%. Stem rust was predominant at this stage.

Head blight, apparently caused chiefly by Gibberella saubinetii [G. zeae] was also very common, although this disease is not recognized by the farmers. Prevalence varied from 30 to 80% in the fields visited.

Covered smut (Tilletia sp.) was also observed for the first time this year in this region. -- R. E. Atkinson, Emergency Plant Disease Prevention Project.

WHEAT DISEASES IN IOWA: During the period ending July 8 surveys were made in northeastern and southeastern Iowa. In general the crops are grow-

ing well; most of them have recovered from the early rains and floods. Wheat fields seen in the northeast and southeast portions were in good condition, most of them being waist-high or higher. Leaf rust was present in all fields, in many cases in the telial stage. Epidemic amounts were observed in only one field. Stem rust was present as a trace in all cases. From 1 to 2% of speckled leaf blotch (Septoria tritici) was present in a field near Muscatine. Scab [Gibberella zeae] was present in all wheat fields, in amounts from a trace to as much as 40%. It was the most serious disease found on the above-ground portions of the plants. Loose smut (Ustilago tritici) occurred in amounts up to 2%. In a field of spring wheat seen near McGregor, ergot (Claviceps purpurea) was present on about 1% of the heads. -- Edgar F. Vestal, Emergency Plant Disease Prevention Project.

DISEASES ON WHEAT IN NEBRASKA: From June 19 to 26 wheat, oats, and barley were examined in 30 counties in the eastern third of the State east of a line running from Norfolk to Kearney. Wheat is mostly in the soft dough stage, but there are many fields where it is much later. Hot dry weather with strong southerly winds from June 21 - 25 is causing grain to mature rapidly and some fields in southeastern Nebraska are already in the hard dough stage.

Stem rust was found in 43 fields in 24 counties, ranging in amount from a trace on scattered plants to 10% infection on 100% of the plants. In the 33 fields where the amount recorded was a trace, 20 had a trace on scattered plants, 8 a trace on 1-40% of the plants, and 5 a trace on 50% or more of the plants. Five fields were estimated to have 1% on 100% of the plants, 2 fields 2%, and 2 others 5 and 10%, respectively. The average for all fields examined would not be more than 1%. Stem rust is scattered rather generally over this area with some heavy infections in Buffalo and Hall Counties in the south-central area and in Nemaha, Richardson, and Pawnee Counties in the southeast. In these latter counties wheat is more mature with some fields in the hard dough stage. In Hall and Buffalo Counties some of the fields are very late and in these stem rust is already well established (1-2% on all plants). The combination of hot dry weather and stem rust may cause considerable damage.

Leaf rust was present in all fields and readings which were made in 35 fields varied from 1% on 50% of the plants to a prevalence of 60% on all plants with an average of 28%. While considerable variation exists in individual fields within a county, it appears that leaf rust is heavier in the counties south of the Platte River. Along the northern edge of the winter wheat region which runs from Burt County west to Antelope County leaf rust is surprisingly heavy, averaging 20% infection in 6 fields in this area. Part of this may be due to the fact that this area was relatively free from speckled leaf blotch. The lower leaves which in other parts of Nebraska and Kansas have been killed by this disease, were still green and permitted the leaf rust to build up. Except in the area indicated above speckled leaf blotch was found in all fields causing the destruction of most of the lower leaves, some of the middle leaves and occasionally the upper ones as well.

Loose smut was found in 80% of the fields ranging from a trace to 10% and averaging 2%.

Scab is very conspicuous especially in the eastern part of the State. It was present in 67% of the fields in 19 counties varying from a trace to 25%, averaging 7%. In Douglas, Sarpy, Cass, Otoe, Nemaha and Richardson

Counties, 12 fields averaged 16%.

A very striking feature of many fields is the presence of scattered single dead plants throughout the field. The "white heads" are especially conspicuous in the fields which are still green. Usually all of the culms are dead and the heads may or may not be partially filled. When the crown is sectioned there is generally definite discoloration and blackening and as the condition advances, rotting of the tissues. This condition is typical of the disease known as dry land foot rot (as described by Dr. H. Fellows, U.S.D.A.), but it differs in that it is not general in a field. While dry land foot rot is typically western, this condition has been observed in western and central Kansas (see previous report) and on this present survey was found in 14 of the eastern counties of Nebraska. Since this foot rot was found in 40% of the fields it would indicate a rather general distribution in the eastern part of the State. In most fields the amount was recorded as a trace, but in Douglas County 3% of the plants were involved. There are indications that many plants have died within the last few days and it would appear as if the number of dead plants is showing a very rapid increase.

Other wheat diseases which are of minor importance are as follows: Stinking smut (Tilletia sp.), one field with 1% was found in Howard County in the variety Chiefkan. Black chaff (Bacterium translucens var. undulosum) [Xanthomonas translucens f. sp. undulosa] was found on some of the heads in one field in Cass County. A bacterial leaf spot was also found on the flag leaves in the same field, and it is believed that these are also caused by the black chaff organism. Material has been sent in for identification. Glume blotch (Septoria nodorum) was found on a few heads in one field in Nemaha County. Darluca filum was observed parasitizing the uredosori of leaf rust in the rust nursery at Lincoln, Nebraska. -- Stuart M. Pady, Emergency Plant Disease Prevention Project.

WHEAT DISEASES IN OKLAHOMA: Approximately 3700 acres were surveyed. June 7 to 20.

Leaf rust occurred very late in the growing season in the wheat belt of Oklahoma, and with a few exceptions, it resulted in very little, if any, reduction in yields in the main wheat growing counties of the State. In 3 or 4 instances (Garfield and Kingfisher Counties) late-planted wheat had 50 to 85% of the leaf area invaded. These plantings were in the late milk stage and early dough stage which would suggest that reductions in yields were inevitable. Similar losses were observed in 3 fields in Delaware County near Grove.

Stem rust appeared too late in the growing season to cause an appreciable reduction in yields. Localized infections, in Delaware County, amounted to as much as 10%. Considering the wheat crop as a whole, stem rust infections would not exceed 1 or 2%.

Dry land foot rot (Helminthosporium sativum) was the most prevalent and destructive disease of wheat in Alfalfa, Garfield, and northern Kingfisher Counties. An extensive survey in plots at Cherokee (Alfalfa County) showed an average infection of over 25%. In several plantings in Garfield County, near Enid, losses in localized infections reached 40%.

Speckled leaf blotch was the most prevalent disease observed in wheat during the early part of the growing season. During a survey made April 5, nearly every planting had the lower leaves infected and in many instances killed by this organism. Examinations of these plantings later on in the

growing season showed that the flag leaves had been infected in many of the fields. Destruction of the lower leaves early in the growing season and flag leaf infections later in the season would suggest that the yield should be reduced to some extent.

Very few fields were observed in which loose smut was causing an appreciable loss. Nevertheless, a small amount occurred in nearly every field surveyed. In the most severely infected planting, there was a loss of nearly 5% of the heads due to loose smut, this observation being based on a count of 500 heads.

Black chaff was observed in plantings near Grove (Delaware County). Very little reduction in yields resulted from these infections.

Scab occurred in plantings in Delaware and Garfield Counties. Incidence in all cases was insignificant, infection usually being limited to an occasional plant.

Only a small number of plants were observed showing typical symptoms of anthracnose (Colletotrichum graminicolum). -- Howard W. Larsh, Emergency Plant Disease Prevention Project.

STRIPE RUST ON WHEAT IN OREGON: Puccinia glumarum was noted in an experimental plot at Corvallis by Mr. F. D. Bailey and Dr. C. E. Owens, June 24. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

DISEASES REPORTED ON LEGUMINOUS FORAGE AND COVER CROPS

LEAF SPOTS ON ALFALFA IN MASSACHUSETTS: Leaf spots caused by Pleospora trifolii and Pseudopeziza medicaginis occurred in traces in a field in Sunderland; the latter was well scattered through the field. -- Robert C. Cassell, Emergency Plant Disease Prevention Project.

DISEASES OF ALFALFA IN THE NEW JERSEY-DELAWARE-MARYLAND AREA: Ascochyta imperfecta developed in cultures from stubble collected in fields examined during the winter at Delmar, Delaware, Colora, Maryland, and in the Bridgeton-Elmer area of New Jersey.

Pseudopeziza leaf spot was appearing abundantly on the lower and middle leaves in the Vineland, New Jersey, area, April 26. In fields examined in the Hughesville-Waldorf area of southern Maryland during the first week in May it was abundant on the lower and middle leaves and some of the lower leaves were dropping. -- E. A. Walker, Emergency Plant Disease Prevention Project.

ALFALFA YELLOWS IN KENTUCKY: The survey during the period June 21 to 29 was made in central Kentucky, from Franklin to Hopkinsville, Louisville, Covington, and Lexington. Moderate to severe drought conditions were encountered over the entire area. Alfalfa yellows was quite generally observed, being present in over 75% of the 450 acres in 72 fields. About 70% of the yellows observed was rated as light and 30% as moderate to severe. The symptoms would indicate that boron deficiency was quite general, with leafhoppers and other factors contributing. -- R. A. Hyre, Emergency Plant Disease Prevention Project.

DISEASES ON ALFALFA IN OKLAHOMA: Approximately 1500 acres were surveyed, June 7 to 20. Alfalfa plants showing yellowing and brown spotting of the

leaves were collected from several areas. Dr. W. W. Ray identified the causal fungus (Sporonema phacidiodes). Severe defoliation usually results when the plants are infected early. At the time of this survey this leaf spot was the most prevalent and destructive disease of alfalfa.

Blackstem (Ascochyta imperfecta) was present in several of the plantings surveyed. In most instances the infection was limited to a small number of plants, but a loss of nearly 5% of the plants was observed in 2 plantings in Alfalfa County and in a single planting in Caddo County.

Bacterial wilt (Corynebacterium insidiosum) occurred in 2 plantings near Frederick, Tillman County. Wilted and dead plants were observed in both plantings and the causal organism was isolated from plants collected from these fields.

Rust (Uromyces striatus var. medicaginis) was relatively sparse in the plantings in southern Oklahoma at the time of this survey. -- Howard W. Larsh, Emergency Plant Disease Prevention Project.

CLOVER DISEASES IN THE NEW JERSEY-DELAWARE-MARYLAND AREA: During the winter crimson clover fields were examined at Bethel and Laurel Delaware, where crown rot (Sclerotinia trifoliorum) appeared to be most destructive. The disease was causing losses ranging up to 15% of the plants killed in this area. In all fields examined in Maryland near Salisbury, Princess Anne, Hurlock, and Hebron the disease was found to be slight to moderate. In one field near Manokin in Somerset County 85% of the plants were killed by the beginning of February. The disease was not observed in New Jersey at this time.

In subsequent surveys in crimson clover fields, crown rot had destroyed 98% of the crop in a 2-acre field near Manokin, Maryland, and was observed frequently in the Westover, Delmar, and Hurlock area in Maryland and in the Laurel-Seaford area in Delaware. Damage in these fields had reached 25% of the plants killed prior to April 12. Sclerotia were forming in the dead crowns and roots. Crown rot was not observed frequently in New Jersey.

The disease was not generally present on red clover. In southern Maryland during the first week in May, it was observed to be killing 20% of the plants in scattered areas in a 10-acre field near Owings. The clover was in the early blossom stage and sclerotia were developing abundantly on the dead crowns and roots. -- E. A. Walker, Emergency Plant Disease Prevention Project.

LEAF SPOT ON RED CLOVER IN WESTERN WASHINGTON: Leaves and stems of red clover observed in Grays Harbor County, June 20, were well covered with spots caused by Pseudopeziza trifolii, and the quality and yield of hay were greatly reduced. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

FUNGI OBTAINED FROM STUBBLE OF SOYBEANS AND OTHER LEGUMES IN THE NEW JERSEY-DELAWARE-MARYLAND AREA: During the winter several trips were made to observe the diseases present on the stubble in fields of soybean, cowpea, lespedeza, etc., in the 3 States.

Soybean. - Rows of pycnidia occurred on the stem of a sample from Bethel, Delaware, fading out to a lighter-colored zone with fewer fruiting bodies. Phomopsis sojae was isolated from the zone of abundant pycnidia, while stylospores of Phomopsis were abundant in the zone of smaller and less frequent pycnidia. This was confirmed on many other samples. Stubble in all

of the many fields visited in the 3 fields was affected by Phomopsis.

Soybean stubble in the Westover, Maryland area appeared covered with "leopard spots" from which Macrophomina phaseoli was isolated. Both Macrophomina and Phomopsis were often found present on the same stems.

Edible soybeans collected at the Ridgely Experiment Station were found to be infected with Phomopsis.

Cowpea. -- Botrytis cinerea was cultured from sclerotial bodies attached to the bases of stems in several fields. Phomopsis-like pycnidia on several stems yielded only stylospores of Phomopsis sp. The saprophytic Epicoccum sp. was obtained from some stems. Ascochyta phaseolorum was isolated from stems collected near Salisbury, Maryland, and Bridgesville, Delaware. Macrophomina phaseoli was obtained from some stems collected at Bryantown, while Fusarium sp. was produced in cultures from other plants that had died prematurely and showed pink roots. Samples from a field near Leonardtown, Maryland produced Colletotrichum sp. in culture.

Lespedeza -- No parasitic organism was produced in cultures from Korean lespedeza collected near Delmar and Glasgow, Delaware, and Elkton, Maryland. Didymosphaeria brunneola developed in cultures made from L. sericea collected near Cobbs Corner, New Jersey, and Coniothyrium sp. in samples from Pomfret, Maryland.

Other Forage and Miscellaneous Legumes. - The following organisms were obtained in cultures: Phoma sp. in collections of partridge pea from Glasgow, Delaware; Colletotrichum sp. in collections of lupine from Hughesville, Maryland; Microdiplodia sp. on Scotch broom from near Middletown, Delaware; Didymella obscura on sweetclover stems from near Colora, Maryland. -- E. A. Walker, Emergency Plant Disease Prevention Project.

DISEASES ON SOYBEAN IN NORTH CAROLINA: Dry weather in the Piedmont has been hard on soybeans, but has probably kept leaf diseases at a minimum this season. However, bacterial blight [Pseudomonas glycinea], frogeye [Cercospora sojina], downy mildew [Peronospora manshurica], and mosaic (virus) were found. They are not of economic importance at this time. A marginal leaf spot on which a Phyllosticta sp. was fruiting was observed on the lower leaves in one field. -- R. E. Atkinson, Emergency Plant Disease Prevention Project. June 12 - 24.

DISEASES OF SOYBEANS IN MINNESOTA: In soybean fields examined in the vegetable-growing area in Ramsey, Hennepin, and Anoka Counties between July 6 and 11, infection of bacterial pustule (Xanthomonas phaseoli var. sojense) is heavier than in 1943. The disease has been developing rapidly in the past 2 weeks. Mosaic (virus) can be found readily in all plantings of vegetable varieties. -- Ian W. Tervet, Emergency Plant Disease Prevention Project.

VETCH DISEASES IN SOUTHERN MARYLAND: Fields were examined in southern Maryland during the first week in May. Crown rot (Sclerotinia trifoliorum) was killing 25% of the plants in a thick stand in a 3-acre field near Largo in upper Prince Georges County. Leaf spot (Ascochyta pisi) was very pronounced in a field of vetch and wheat near Aquasco. Mottling of the leaves, possibly caused by a virus, was seen in a roadside planting near Hughesville. -- E. A. Walker, Emergency Plant Disease Prevention Project.

REPORTS ON LATE BLIGHT AND OTHER DISEASES OF POTATO

LATE BLIGHT IN MAINE: Dr. E. S. Shultz found late blight (Phytophthora infestans) in 4 out of 5 potato cull piles examined June 26. I found late blight on 20 small plants in a potato field at Presque Isle on July 8. The disease appeared to have been spreading in spite of the unfavorable weather for the development of late blight. -- Reiner Bonde, Maine Agricultural Experiment Station.

LATE BLIGHT THREATENING IN NEW YORK: Late blight has been found throughout a field in Steuben County, July 6. Last week it was reported in a field near Ithaca. It undoubtedly is present unobserved in many other fields of the State. The present hot, dry weather and warm nights are unfavorable for its spread but, whenever cooler weather comes and the vines become wet, it will spring into action with astonishing rapidity. The danger of a heavy loss is great unless the vines are thoroughly protected from now on throughout the season. -- M. F. Barrus, Weekly News Letter, July 10.

LATE BLIGHT IN IOWA: Potato fields in north-central and northeastern Iowa were examined for late blight during the week ending July 8. One field near Fertile, in Worth County, contained unmistakable blight; sporulating lesions had been found in this field earlier (see preceding issue PDR). The disease was spreading in this field. Plants in the neighboring field bore late-blight like spots but at the time of this report they have not been determined positively as caused by the late blight organism. Other fields had been damaged by leafhoppers and spray so that field identification was difficult. -- Edgar F. Vestal, Emergency Plant Disease Prevention Project.

LATE BLIGHT IN CENTRAL STATES AND IN CANADA: Late blight has been very active this past week. Dr. C. J. Eide reports that Dr. A. A. Granovsky collected late blight on July 9 at East Grand Forks. This is 7 days earlier than it was found last year in Minnesota.

Dr. R. H. Larson reports finding it at Antigo, Wisconsin, on July 11, 14 days earlier than last year.

Now here comes the real surprise. Dr. J. H. Craigie reports late blight from Winnipeg, Manitoba, in a letter to me under date of July 15. This is 27 days earlier than last year. With the discovery of the disease at Winnipeg we are able to say that late blight has been found at 3 points over an area covering 12° latitude or approximately a thousand miles from north to south. If it occurs at these 3 points it is comparatively safe to assume that it occurs at other intermediate points.

Dr. W. E. Brentzel, in spite of a diligent search last week, was unable to find it in North Dakota. Weather records for the first 10 days of July in that State have been favorable for the development of the late blight organism.

Dr. L. F. Buchholtz reports no late blight for South Dakota. He says that the weather in their chief potato growing area has been on the dry side until the last week or 10 days.

It is significant to note that the findings of late blight in the field this year are from 7 to 27 days earlier than those of the same States last year.

The weather data for the 10 days in July shows that conditions were highly

favorable in Minnesota, South Dakota, North Dakota, and Iowa; less favorable in Ohio, Indiana, Illinois, Michigan, and Nebraska. Colorado, by virtue of the fact that the crop is grown largely under irrigation has to be considered in a class by itself. So far no late blight has been reported for that State, and, as Dr. Craigie says, "No news in connection with late blight is good news".

By this time it is perfectly clear to all of us that late blight, if conditions remain unfavorable, will cause heavy losses in potatoes that are not sprayed. Fortunately through the splendid work that has been done much spraying has and is being done. I predict little damage generally in the intensive potato growing regions. The Iowa potato growers have been spraying right along since the potatoes were 8 inches high.

In North Dakota Brentzel says farmers are dusting even though there is no late blight. In Wisconsin, Larson says: "The farmers are doing a very good job of spraying." Now is the time to bend every effort to hold the gains we have made and the only way out is by more spraying. -- I. E. Melhus, Letter to Late Blight Committee of Upper Mississippi Valley Plant Pathologists. July 12.

LATE BLIGHT IN OREGON: On June 30, I accompanied Mr. F. D. Bailey to Lincoln County. Late blight was noted in a low field on the coast near Newport by Mr. Bailey and Dr. P. W. Miller, June 23. The location of this field is ideal for the development of late blight. At present, control practices appear to have checked its rapid spread and it may not cause serious loss in the early crop. -- Lytton W. Boyle, Emergency Plant Disease Prevention Project.

POTATO DISEASES IN MASSACHUSETTS: Although the growth of potato tops is too far advanced in the Connecticut River Valley for accurate counts of leaf roll (virus) now, U. C. Boyd and Thomas Sproston, Jr. report that extensive counts made by them at an earlier date revealed a surprisingly small amount. The counts ranged from 2% to 8 to 9%.

A trace of blackleg (Erwinia atroseptica) [E. phytophthora] was found in one field in Sunderland. Tipburn (cause doubtful) is just showing in trace amounts in a few fields. -- Robert C. Cassell, Emergency Plant Disease Prevention Project. July 6 - 8.

POTATO DISEASES AND INJURIES IN MINNESOTA: Between July 6 and July 11, part of the vegetable growing area in Ramsey, Hennepin, and Anoka Counties was inspected, the writer being accompanied by R. C. Rose, extension plant pathologist, University of Minnesota. The principal injury to potatoes in the sand land region north of St. Paul has resulted from leafhopper attack, and flea beetles also have been important. In one field 3% yellow dwarf (virus) was seen. -- Ian W. Tervet, Emergency Plant Disease Prevention Project.

STORAGE DISEASES OF POTATOES IN MARYLAND

E. A. Walker

During the winter months examinations were made of potatoes in storage and potatoes used for dehydration.

Diseases Affecting Potatoes in Garrett County Farm Storage. Storage bins

were examined in the Oakland, Accident, and Red House sections of Garrett County, in the extreme northwestern part of the State, where several diseases were greatly in evidence.

Late blight rot (Phytophthora infestans) was observed to a greater extent in the southern part of the county where loss averaged about 3%, while in the area north of Oakland the average was less than 1%.

Bacterial ringrot (Corynebacterium sepedonicum), which had been reported on the Katahdin variety in the fall of 1943, was not found on potatoes in storage.

Scab (Actinomyces scabies) was present in all bins examined. Infection was moderate in the area south of Oakland, but north of this city it was very severe. Total loss in Garrett County from scab would approximate 20%, including loss from both slight and severe infections.

Fusarium rot due to the wilt organisms F. solani f. eumartii and F. oxysporum was practically absent in the area north of Oakland and very prevalent south of Oakland. One grower's crop of Rural New Yorker contained 36% of tubers showing vascular discoloration. The loss for the County approximates 3%.

Rhizoctonia (Corticium solani) [Pellicularia filamentosa] was present to a slight extent in all bins.

The Sequoia variety showed about 2%, and the Potomac variety about 1%, of hollow heart (physiogenic). The Sequoia variety shows a tendency to produce extra large tubers.

By varieties and areas, disease incidence was as follows:

Variety	Area included	Percentage of tubers affected by disease: Fusarium wilt	Late blight	Scab: Surface	Scab: Deep	Scab: Total	Hollow heart
Early Maine	North of Oakland	0	1	6	24	30	0
Katahdin	South of Oakland	5	2.5	1	1	2	2
Mason	North of Oakland	6	2	13	22	35	0
Potomac	North of Oakland	0	4	25	20	45	1
Rural New Yorker	South of Oakland	11	8	1	2	3	2
Russet Rural	South of Oakland	6	1	7	16	23	0
Sebago	South of Oakland	0	0	0	0	0	0
Sequoia	South of Oakland	1	2	1.5	5.5	7	30
Seedling	South of Oakland	0	0	15	17	32	0
Sequoia	North of Oakland	0	0	7	16	23	2

For the most part the potato crop was harvested following a wet period, and the tubers were full of water when stored. Much sweating occurred in storage, with resulting condensation and dripping of water through the bins. The tubers showed a considerable amount of cracking and bruising, and some indications of a dry rot developing in these bruises.

Potatoes in Home Storage on the Eastern Shore. The potato area of Worcester and Somerset Counties was visited, and tubers in home storage examined for the prevalence of diseases. The tubers went into storage in excellent condition, and when examined were practically free from diseases except for a small amount of surface scab, averaging less than 0.5%, although it

amounted to 5 or 10% in some bins. More scab was observed on Sequoia than on Irish Cobbler or Dakota Red. Late blight was observed on Sequoia tubers in the area northeast of Snow Hill.

Condition of Potatoes from Other States Received at a Dehydration Plant. Potatoes being processed at a dehydration plant in Salisbury were received in cars from Maine, loaded in bulk and ungraded. Tubers were examined in numerous sheds after unloading, and on several occasions during processing at the plant. In many cases the tubers were in excellent condition, while samples from other cars were badly affected by various injuries resulting in a considerable amount of discarding at table and elevator. Frost injury appeared to be worst, and hundreds of bushels of rotted potatoes were discarded. Rot from frost would approximate about 8%, while frost necrosis (internal blackening) amounted to over 2%. Incidence of hollow heart was well over 10% in all lots examined; it was worst in the Katahdin variety. Scab was slight, about 3%, with most tubers showing only shallow lesions. Incidence of late blight rot ranged from 2 to 5% and averaged 3% in most lots. A slight amount of stem-end browning of undetermined cause was observed. Bacterial ring rot was frequently observed; it was most common on Katahdin, about 1% of the tubers of this variety being infected.

Samples of graded and bagged potatoes from Michigan were observed to be in excellent condition. Tubers of the Utility grade of Idaho Russets in bags were observed with 50 to 60% of the stem ends cut off, and with 10% showing the stem ends sunken and dry rot developing.

Condition of Seed Potatoes in Western Maryland. Complaints were received from the growers about the amount of internal discoloration appearing in seed pieces being cut, and seed stocks were examined in the Hagerstown (Washington County) and other areas. A considerable amount of stem-end browning was observed in tubers of Katahdin and Green Mountain, and a slight amount of net necrosis in Green Mountain. Irish Cobbler was relatively free from net necrosis. No disease was observed on Red Bliss. A slight amount of internal necrosis due to frost injury was detected.

Late blight was light in stored potatoes in the Oakland area, amounting to less than 0.5%.

Scab was severe. Counts showed as high as 50% of the Sequoia variety affected, with 22% being deep scab and 28% shallow scab. Seed treatment is necessary for seed stocks in this area.

Storage rot due to Phoma tuberosa was affecting about 35% of the crop in storage in the Oakland-Accident section of Garrett County. Table stock and seed stocks were equally affected in all varieties examined, including Sequoia, Potomac, Smooth and Russet Rurals. This rot followed digging injury, bruises, and late blight infection.

EMERGENCY PLANT DISEASE PREVENTION PROJECT.

DISEASES OF CANNING PEAS OBSERVED IN WISCONSIN

Edwin E. Honey and W. W. Hare

From June 26 to 30, inspection was made of 76 pea fields totalling 758.8 acres in 10 counties, grown for 9 canning plants in southeastern and western Wisconsin. The varieties grown and the acreage inspected are given by

counties in Table 1. Alaska was grown on 55% of the acreage examined: at the time of inspection it was in the pod to canning stage of development. Sweet varieties ranged from preblossom to young pod stage. Canning had been under way for about a week in some areas; in others it was to begin this week.

Table 1. Canning pea varieties: distribution and acreage surveyed in Wisconsin during June.

Variety	Acreage by counties										Total acres	
Total no. fields	Dane	Wash-ington	Wau-ke-sha	Dodge	Fond du Lac	Mara-thon	Wood	St. Croix	Pep-in	Pierce	Number	Per-cent
Alaska, 36	6	11	22		13	16	57	171.5	76	45	417.5	55
Prince of Wales, 8		4			12			94.3			110.3	14.5
Chief, 10								104			104	13.7
Pride, 9	6	10		34.5							50.5	6.7
Wisconsin Perfection: 9		7	2	2	27	17.5					53.5	7
All Sweet 1										8	8	1.1
Canner King, 1				8							8	1.1
Merit 1				6							6	0.8
Surprise 1								1			1	0.1
Totals 76	12	32	24	48.5	52	33.5	57	370.8	76	53	758.8	100

Table 2. Incidence and severity of pea diseases in 76 fields in 10 counties in Wisconsin, June 1944

Disease	Percent of fields infected	Percent of fields with extent of disease indicated			
		Trace*	Slight*	Moderate*	Severe*
Ascochyta blight	88.7	23.9	35.2	15.5	14.1
Anthracnose	59.2	23.9	16.9	8.5	9.9
Bacterial blight	66.2	14.1	8.5	16.9	26.7
Septoria blight	21.1	21.1	0.0	0.0	0.0
Downy mildew	5.6	5.6	0.0	0.0	0.0
Mosaic	4.2	4.2	0.0	0.0	0.0
Streak	1.4	1.4	0.0	0.0	0.0
Near wilt	1.4	1.4	0.0	0.0	0.0
Aphanomyces root rot	28.2	8.5	7.0	1.4	11.3
Fusarium root rot	4.2	2.8	1.4	0.0	0.0
Water injury	4.2	0.0	2.8	0.0	1.4

* According to classes defined in Table III, page 4 of Wisconsin Research Bulletin 145, 1943.

In general, the weather, especially during June, had favored development of diseases, there being much rain and periods of high humidity. Some locations had received twice the normal amount of rainfall, and in places with clay soil or a hardpan subsoil excess moisture made preparation and planting of the fields difficult. In a few fields from slight to severe water injury was observed.

In Table 2 incidence and severity of the diseases encountered are summarized. Leaf diseases, including Ascochyta blight, anthracnose [Colletotrichum pisi], and bacterial blight [Pseudomonas pisi] occurred in from 60 to 89% of the fields examined and were more severe under the weather conditions of this season than during a similar period last year (PDR 27 (12/13): 244-245. 1943). How destructive bacterial blight or other foliage diseases may become on later plantings will depend largely on the weather. Downy mildew [Peronospora pisi], and Septoria blight [S. pisi] occurred in traces in about 6 and 21%, respectively, of the fields examined. These relatively unimportant diseases appear to have been slightly more severe last year. Powdery mildew [Erysiphe polygoni] was not observed in any location.

The importance of rotation and of isolation from the preceding year's pea fields in avoiding a build-up of leaf troubles such as Ascochyta blight was very evident. Certain severe infections could be traced to peas either following peas, or planted in sites closely adjacent to last year's pea fields and subject to infection by wind-borne inoculum from the old stubble into the new field, especially when located on the lee side of the prevailing wind. In several cases of the latter type, infection that was apparently as severe as though peas had been grown on the same field during the preceding year gave evidence that sites for pea fields should be selected at a sufficient distance and in a proper direction from the preceding year's location.

Mosaic (virus), streak (virus), near-wilt [Fusarium oxysporum f. pisi race 2], and Fusarium root rot [F. solani f. pisi] were found only in traces or slight amounts in about 2% of the fields; severity was comparable with last year at this time. Near-wilt and the virus diseases, no doubt, will become more apparent and severe later in the season.

Although Aphanomyces root rot [A. euteiches] was found to be less severe than last year, it still remained the most destructive disease of the crop. It was present in about 28% of the fields examined, and severe in about 11%. While plants severely infected by the foliage diseases may produce a partial crop, those affected by root rot generally are a complete loss.

EMERGENCY PLANT DISEASE PREVENTION PROJECT AND UNIVERSITY OF WISCONSIN.

JUNE WEATHER

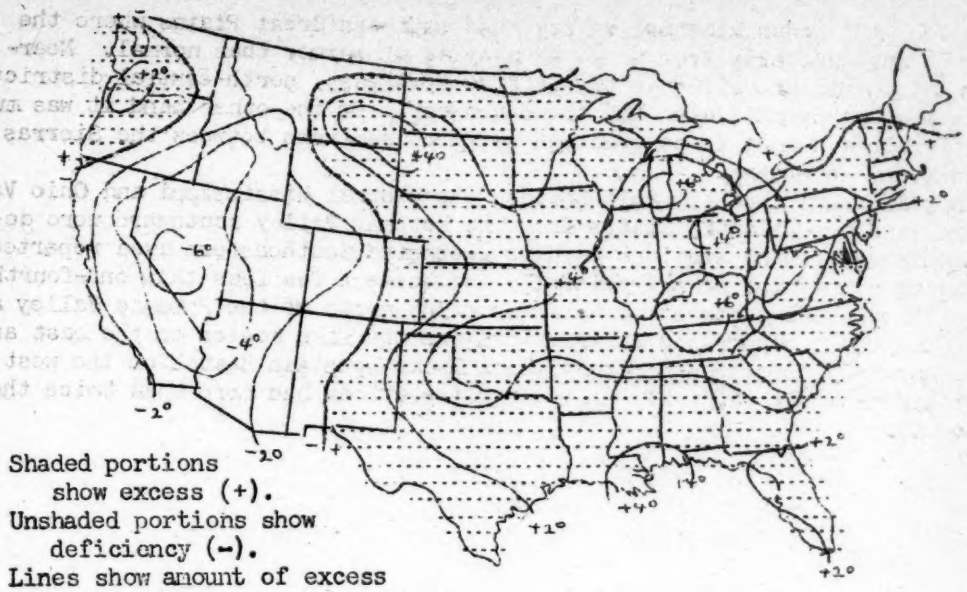
(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for Week ending July 4, 1944).

The weather for the month of June 1944 was characterized by above-normal warmth in the central and eastern portions of the country, extreme dryness in a large southeastern area and heavy precipitation in most districts from the western Lake region westward to and including the northern Rocky Mountain area and northern Great Basin.

Map I shows that the greatest plus anomalies of temperature occurred in the interior of the south Atlantic area, the Ohio Valley, southern Lake

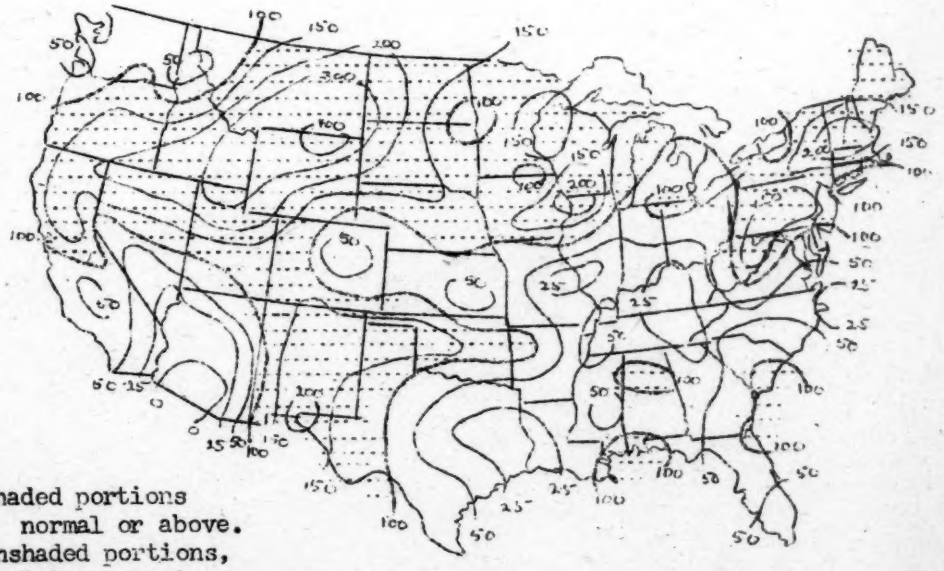
region, the lower Missouri Valley, and southern Great Plains where the month was generally from 4° to as many as 6° warmer than normal. Near-normal warmth prevailed in the extreme Northeast, north-central districts, the western Great Plains and the Southwest. On the other hand it was much cooler than normal in central and southern sections between the Sierras and Rocky Mountains.

Map II shows that the Gulf States, the central Mississippi and Ohio Valleys, and the Atlantic States from the Potomac Valley southward were decidedly dry. Many stations in this extensive Southeastern area reported less than half the normal rainfall, and quite a few less than one-fourth the normal. In contrast to this, sections north of the Potomac Valley and most of those comprising the area between the Lake region on the east and the northern Great Basin and northern Rocky Mountain States on the west had far above-normal rainfall; considerable sections had more than twice the normal.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Map. I - Departure of mean temperature from the normal for June 1944.



Shaded portions normal or above.
Unshaded portions, below normal.

Map. II - Percentage of normal precipitation, for June 1944.